

### **REMARKS**

The Non-Final Office Action of May 20, 2003 has been carefully considered by the Applicants. Applicants respectfully submit the application is in condition for Allowance. Issuance of a Notice of Allowance is respectfully requested.

Applicants respectfully traverse the withdrawal of claims 35-37 as being directed to a non-elected invention. The subject matter of claims 35-37 is directed to species previously disclosed in the application and subject to search. Consideration of claims 35-37 is respectfully requested.

Claims 6-15 and 16-34 are rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the enablement requirement. The claims have been amended to specify "carbon" atoms as taught in the specification. Applicants respectfully submit these amendments overcome the Examiner's 35 U.S.C. § 112, first paragraph rejections. Withdrawal of the rejections is respectfully requested.

Claims 18-27, 33, and 35-37 have been amended to clarify dependency.

The Examiner has rejected claims 6-10, 13, 14, 16-19, 22, and 25-27 under 35 U.S.C. § 102(b) as being anticipated by Garnier. Applicants respectfully traverse.

According to the Examiner, Garnier discloses a thin film transistor (TFT) comprising a substrate, gate electrode (called conducting grid), gate dielectric source/drain electrodes and a semiconductor layer comprising a polythiophene. The Garnier patent specifically teaches and claims a semiconductor layer having a molecular weight less than 2,000. Moreover, Garnier specifically teaches against the use of polymers, stating that oligomers are preferred. The present invention has a polythiophene with an  $M_n$  between about 2,000 and 100,000. This is above the molecular weight of the Garnier reference. Garnier cannot, therefore, be said to anticipate the present invention due to the patentably distinct molecular weights of their respective polythiophene layers. Withdrawal of the 35 U.S.C. § 102(b) rejections is therefore respectfully requested.

Claims 11-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Garnier in view of Duthaler. Applicants respectfully traverse.

The Examiner states that Duthaler teaches a TFT and method of forming said TFT having the substrate, gate and source/drain electrode, and gate dielectric materials of instant claims 11, 12, and 15, as well as the methods for depositing these semiconductor device features in instant claims 13 and 14. Applicants respectfully note that even if the Examiner is correct in these assertions, they do not render the present claims obvious. The present invention claims a polythiophene layer with a  $M_n$  between about 2,000 and 100,000 (claim 6). Garnier claims and teaches a molecular weight below about 2,000. Even if the Duthaler and Garnier were combined, the resulting TFT would not be the same as the presently claimed TFT due to the patentably distinct semiconductor layer of the present invention. There is no teaching or suggestion in either Garnier or Duthaler that would lead one of skill in the art to ignore the explicit teachings of Garnier and modify the claimed Garnier molecular weight. The present claims are not, therefore, obvious over Garnier in view of Duthaler. Withdrawal of the 35 U.S.C. § 103(a) rejections over Garnier in view of Duthaler is respectfully requested.

The Examiner has rejected claims 16-21, 28-31, and 35-37 under 35 U.S.C. § 103(a) as being unpatentable over Garnier in view of Reed. Applicants respectfully traverse.

According to the Examiner, Reed teaches polythiophenes for electrical applications and teaches the instantly claimed central thiophene monomers in the oligomer. Applicants respectfully assert that Reed and Garnier do not teach polythiophenes having a molecular weight between about 2,000 and 100,000 as claimed in present claim 16. Moreover, Garnier actually claims a molecular weight below 2,000. The Examiner has the burden of showing motivation for combining the references. No motivation has been provided by the Examiner that would lead one of ordinary skill in the art to not only combine the references, but also to modify the explicit teachings of one of those references, as would be necessary to achieve the instantly claimed TFTs. The present claims are not, therefore, obvious over Garnier in view of Reed. Withdrawal of the 35 U.S.C. § 103(a) rejections over Garnier in view of Reed is therefore respectfully requested.

Claims 23 and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Garnier in view of Reed and further in view of Sato. Applicants respectfully traverse.

The Examiner states that it would have been obvious for one of ordinary skill in the art, at the time of the invention, to use the molecular weight for the polythiophene of Garnier in view of Reed as that taught in Sato as a matter of routine optimization. Applicants respectfully assert this is not so. Garnier explicitly teaches a polythiophene molecular weight of less than 2,000. Nowhere in Garnier is it even suggested that a higher molecular weight is suitable. Garnier certainly had the option of using a higher molecular weight, as higher molecular weight polythiophenes were known at the time of Garnier's invention. If the use of a higher molecular weight were, as suggested by the Examiner, nothing more than routine optimization, the Garnier certainly would have "optimized" his invention.

Moreover, Garnier explicitly teaches away from using higher molecular weight materials. At column 3, lines 1-4, Garnier states that oligomers are preferred over polymers. The Examiner has provided no motivation within any of Garnier, Reed, or Sato that would lead one of skill in the art to go against the explicit teaching of Garnier by using polymers with a molecular weight of between about 2,000 and 100,000 such as those presently claimed. Applicants respectfully assert that a modification that is taught against by the reference cannot be obvious. Withdrawal of the 35 U.S.C. § 103(a) rejections over Garnier in view of Reed and further in view of Sato is therefore respectfully requested.

The Examiner has rejected claim 34 under 35 U.S.C. § 103(a) as being unpatentable over Garnier in view of Reed and further in view of Dodabalapur. Applicants respectfully traverse.

According to the Examiner, it would have been obvious for one of ordinary skill in the art, at the time of the invention to use the substrate thickness of Dodabalapur as the substrate thickness in Garnier in view of Reed, because Garnier is silent as to the thickness of the plastic substrate such that one of ordinary skill would be motivated to use conveniently known thicknesses which are readily available and already used for TFTs such as those in Dodabalapur. Applicants respectfully assert that even if the Examiner's assumptions were true, such a combination would not result in the present invention of claim 34. The present invention includes a polythiophene with a molecular weight between about 2,000 and 100,000. The Examiner has provided no motivation that would lead one of ordinary skill in the art to combine the references and then modify the

molecular weight explicitly taught by Garnier to one explicitly taught against by Garnier. It would not be obvious to go against Garnier's explicit teachings. Withdrawal of the 35 U.S.C. § 103(a) rejection over Garnier in view of Reed and further in view of Dodabalapur is respectfully requested.

Applicants respectfully submit that in view of the above amendments and remarks, the present application is in condition for allowance. Withdrawal of the rejections and issuance of a Notice of Allowance is respectfully requested.

Respectfully submitted,  
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